

# Nuclear Division News



A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 8/No. 20 October 13, 1977

## The corporate world of Union Carbide

Union Carbide Corporation has announced that it is intensifying a comprehensive process-improvement program which began early this year. The program involves a reduction in overhead expense and in personnel; selected cutbacks and stretchouts in construction and capital investment; and withdrawal from product lines and development

programs which do not meet long-term profit objectives according to William Sneath, chairman of the board.

"We expect this program to have a beneficial effect on earnings beginning in the second half of 1978," Sneath said. "There is no intention of achieving an arbitrary level of reductions in personnel."

"We are continuing full support of those businesses which are contributing to the company's growth objectives. But at the same time we are accelerating our efforts to offset the stubborn 'cost-price squeeze which pervades the economy,'" he said.

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CONSTRUCTION OF A \$12 million industrial gas plant in Changwon industrial complex at Masan, Korea, has been completed, according to an announcement from Union Carbide Corporation. The plant will be operated by Union Gas Company Limited, a joint venture of Union Carbide and Korean investors.

Union Carbide has been active in Korea for a number of years selling chemicals as well as polyethylene and other plastics. Union Gas Company will produce, market and distribute industrial gases for the growing industrial market in that area.

## Firewood cutting October 14, 15

The Forest Management Program of Union Carbide's Nuclear Division will administer another public firewood cutting in the Oak Ridge area October 14 and 15.

The purpose of the cuttings is to provide local citizens with firewood for personal use. Most of the cutting will involve low-grade hardwood trees, although some treetops and limbs from logging operations will also be available.

Those interested in participating should meet Friday or Saturday in the parking lot on Bethel Valley Road, east of the main entrance to Oak Ridge National Laboratory. Groups will be accompanied to the cutting area by members of the staff between the hours of 8 and 9:30 a.m.

A permit fee of \$5 per individual or family will be charged each day to defray costs of personnel needed to monitor the activity. Cutters must bring their own equipment. Road access will be provided for private vehicles to remove firewood from the reservation after it has been cut.

Participants may cut only those trees designated in the areas assigned by the staff. Persons who do not observe this restriction will have their permits revoked and will be asked to leave the cutting area.

Cutting activities will end promptly at 4 p.m. each day. Children under 12 will not be allowed in the cutting area, due to safety regulations.

Dennis Bradburn, ORNL Environmental Sciences Division, will supervise the activity. For additional information contact Bradburn, at 483-8611, extension 3-1266.

## patents granted. . .

To Michael S. Edwards and Billy R. Rodgers, both of ORNL, for "Filtering Coal-Derived Oil through a Filter Media Precoated with Particles Partially Solubilized by Said Oil."

To Frank S. Brinkley and Chester W. Francis, both of ORNL, for "Biological Denitrification of High Concentration Nitrate Waste."

## Trammell appointed director of Engineering Technology

Herbert E. Trammell has been named director of the Engineering Technology Division at ORNL.

The appointment was announced by Donald B. Trauger, ORNL associate director for nuclear and engineering technologies.

Trammell has been director since 1969 of the Gaseous Diffusion Development Division at ORGDP.

As director of the Engineering Technology Division, Trammell will succeed Gordon Fee, who recently was appointed as project manager for the Gas Centrifuge Project Office in Oak Ridge.

The division is responsible for developmental and safety research on nonnuclear as well as nuclear energy systems. Its programs, accounting for an annual expenditure of more than \$20 million, are supported both by DOE and, under interagency agreements, the Nuclear Regulatory Commission.

Trammell began his career with Union Carbide in 1949 at ORGDP and has been involved in barrier research and development continuously since that time. From 1960 to 1965, he was in charge of the physical measurements department. In 1967, he was made responsible for the entire barrier development program.

In addition to these responsibilities, he has served as program manager for the laser isotope separation program activities being conducted in Oak Ridge.



Herbert E. Trammell

A native of Laurel, Miss., he attended the University of Mississippi where, after interruption for service in the Navy during World War II, he received the B.A. and M.A. degrees in physics.

Trammell has been appointed by the governor as a member of the Medical Malpractice Review Board for the state of Tennessee. In addition, he has served as a member of the board of directors of Emory Valley School and is a past president of both the Elm Grove Elementary PTA and the Oak Ridge High School PTA.

He is married to the former Jane Walker, and they have two daughters and two sons. The Trammells live at 104 Ogleshorpe Place, Oak Ridge.

## Flu vaccine. . .

The flu vaccine has arrived. Check with your Health Division or Department for details.

## in this issue. . .

How about a cruise aboard a sailing vessel through the straits of the Bahama Banks? Too expensive? Not according to Kent Williams, ORGDP. Williams comes up with a "different drummer" tale of relaxing under tropical moons and cavorting with prehistoric Iguana lizards on coral beaches. Bird's-eye photo, at right, was taken from atop the crossbeam of the sail. Williams' exciting story is on page 4.

Other features:

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New heaters for THORS. . .

# From drawing board to reality, with assist from four divisions

Thanks to the combined efforts of personnel in four divisions at ORNL and Y-12, the Thermal Hydraulic Out-of-Reactor Safety Facility (THORS) in ORNL's Engineering Technology Division should be doing its job even better by the end of this year.

THORS' next fuel pin bundle will be fabricated using new type, improved variable-width heater elements. Designed by Engineering Technology engineers several years ago, the element looked good on paper but posed problems when it came to fabrication—until Y-12's Fabrication and Development Divisions and ORNL's Metals and Ceramics Division joined forces and came up with some improved techniques.

## Imitates reactor

THORS has been used by the Engineering Technology (formerly Reactor) Division staff since 1970 to study different abnormal fuel assembly conditions which could occur in sodium-cooled reactors—nuclear reactors in which liquid sodium metal is used as the coolant. To enable them to do this, THORS must "imitate" a reactor: its fuel pin simulators, imitations of actual reactor fuel pins, must be heated electrically to the same temperature range that would be expected in an actual reactor.

A problem that arises, however, is that in an actual reactor the heating rate along the fuel pins tends not to be uniform: heating is more intense towards the center of the pins than at the ends. This non-uniform heating distribution has been difficult to copy.

## Old design imperfect

The heating element of a fuel pin simulator is made by winding a flat strip of metal around a mandrel, or spindle. The heat output is determined by the width and thickness of the strip, and by how it is wound.

The fuel pin simulators that have been used in THORS up to now have attempted to imitate the uneven heating distribution of an actual fuel pin by using a heating element of

constant width and thickness, wound loosely at both ends of the mandrel and tightly in the middle. But this hasn't been ideal, says Reg McCulloch, fuel pin simulator development project engineer for Engineering Technology's experimental engineering section. There was a half-inch gap between windings at the ends of the pins McCulloch explains, and therefore a lot of area where there wasn't any heating: "When the pins were heated they would be very hot in one location and relatively cool right next to it. We had all kinds of problems associated with that."

## Machining challenge

In 1973, Engineering Technology's David Clark (now an ORNL consultant) and Tom Kress developed a new design for the heating elements, which involved taking a variable-width strip—specifically designed to be narrow where intense heating is needed and wider in low-intensity areas—and winding it evenly along the mandrel. The new design would eliminate the old heating troubles, but it presented some serious machining problems: the width of the strip had to be cut to exact specifications, and wound so that the gaps between windings would be exactly equal.

"For a couple of years we tried cutting heating elements according to our design, but they weren't any good," McCulloch says. Then John Hurst, fabrication methods coordinator for the Y-12 Fabrication Division, and Reg Lovell of Y-12's Template Grinding Shop decided to try a new method, and perfected a technique in which a stack of 15 metal strips was assembled and three variable-width ribbons cut from each strip, yielding 45 precisely-machined heating elements.

Thanks to their efforts, followed by collaboration with Y-12 Development for the winding procedure and with ORNL's Metals and Ceramics for swaging and inspection, design became reality—as the adjacent photos show.



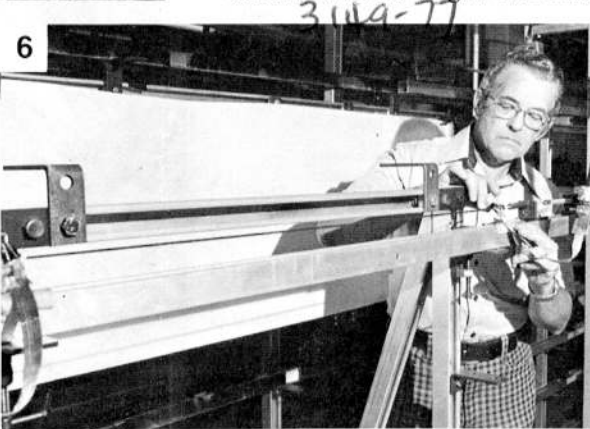
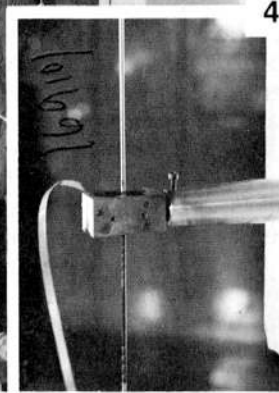
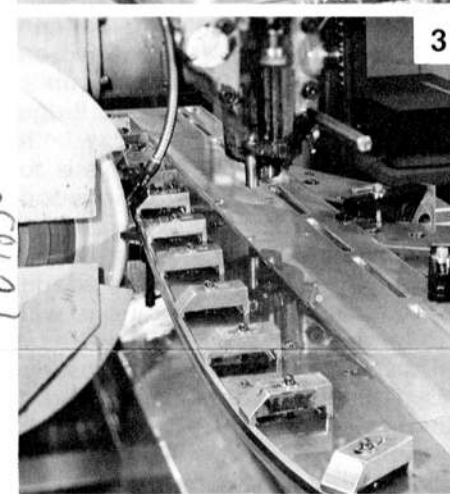
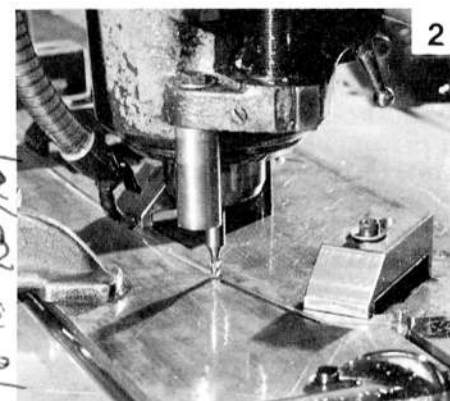
## many hands. . .

Engineering Technology's new THORS fuel pin simulator heating elements passed through a lot of hands before becoming a reality. The process began in Y-12 Fabrication, where the Template Grinding Shop developed techniques to overcome tooling and alignment problems.

Clyde B. Clift (left) and Clifford B. Russell (1) of Fabrication are shown aligning the metal heating element strips before cutting. The strips were then clamped into a fixture, a rough cut was made with the help of an end-mill (2), and the cut surface was machined to exact specifications with an aluminum oxide grinding wheel (3). From Fabrication the heater strips went to Y-12's Development Division, where Dave Post, assisted by Y-12 assemblymen Howard A. Hutcheson and C. K. Endsley developed procedures to wind them precisely around a mandrel (4; inset shows closeup of winding process).

Next stop was ORNL, where Ken Blakely (5) of Metals and Ceramics' metals processing group swaged the wound heating elements. (Swaging is a method whereby rotating "hammers" pound the coils against the center mandrel, making the outside diameter uniform and smooth.) Dick Snyder (6) of ORNL's nondestructive testing group completed the procedure with an infrared inspection, specifically tailored to accurately determine the heat flux profile of the element before it is used.

In photograph 7, Reg Lovell (right) and Reg McCulloch show a completed variable-width heating element. Sixty-one fuel pin simulators incorporating the new heating elements are now being fabricated, and fabrication of a test bundle should begin this fall.



## question box

If you have questions on company policy, write the Editor, **Nuclear Division News** (or telephone your question in, either to the editor, or to your plant contact). Space limitations may require some editing, but pertinent subject matter will not be omitted. Your name will not be used, and you will be given a personal answer if you so desire.

### ORGDP discharge

**QUESTION:** What appears to be fly ash, or soot, continually comes out of the stacks at ORGDP. This results in cars being covered with dirt. In some cases the discharges are harming the finish of cars in the parking lots. Can't something be done about this?

**ANSWER:** We recognize that there is a problem as our old boilers must be fired exclusively with coal in order to conserve natural gas which is in short supply. This problem should be eliminated as soon as the installation of electrostatic precipitators on these boilers is completed. The installation, which is now in progress, will cost more than 1.5 million dollars and is scheduled for completion by May 1978.

### Back-in parking

**QUESTION:** At the Y-12 Plant, signs are posted which require cars to pull forward into parking areas. At ORNL, however, this once was the policy, but now cars park in either direction. Why can't ORNL enforce one rule or the other?

**ANSWER:** ORNL management states that it is true that a few cars park in either direction in the ORNL parking areas. Essentially all of the dual practice occurs in the area set aside for compact car parking where, because of the layout of the lot, some drivers feel more comfortable driving forward into a parking space than they do backing in.

According to ORNL management, this optional parking does not appear to be causing any problems at the present time. If you feel it does present a hazard, please discuss this matter with John Gillette, Laboratory Protection Division.

### Stock options

**QUESTION:** The 1975 tax law provides that corporations may obtain an extra one percent investment tax credit if the proceeds are used to buy Company stock for employees. Why doesn't Union Carbide take advantage of this opportunity to give its employees stock at no cost to the employee and essentially no cost to the Company?

**ANSWER:** This matter has been considered by Union Carbide. There are no plans to establish within UCC what is referred to as a Tax Reduction Act Stock Ownership Plan (TRASOP) under the Tax Reduction Act of 1975 as it would be of little benefit to either employees or the corporation.

### Co-op salaries

**QUESTION:** Why is a co-op student's salary based on the number of quarters of schooling completed but a weekly salaried person's salary is never adjusted if additional schooling is completed.

**ANSWER:** A co-op student's salary is based upon the number of quarters completed. Each additional quarter means the student brings more on-the-job experience and educational background to the job. This justifies the increases which bring the student's salary over a period of time closer to the going rate for graduates being hired.

A weekly salaried person's salary is based upon the initial experience and education that he/she brings to the job. Subsequent movement through the range is based upon performance in the job. The supervisor is normally aware of any educational courses completed, and if this in fact results in improved job performance, it is taken into consideration when salary actions are taken.

## Smith promoted



Smith

Robert L. (Bob) Smith, ORNL Finance and Materials Division, has been promoted to supervisor of capital budget and accounting.

In his 16 years at Carbide, he has served as mail clerk, library assistant and travel assistant. Smith has also worked at the UT Memorial Hospital and is a veteran of the U.S. Air Force.

He attended Knoxville College and UT Evening School.

Smith and his wife, Alice, live at 1215 Chestnut Street, Sweetwater. They have a daughter, Allison.

# Dr. Garrett new director of ORNL Health Division

3247-74

The appointment of A. Seaton Garrett, M.D., as director of the Health Division at ORNL has been announced by Frank R. Bruce, associate director for administration. Effective December 1, Dr. Garrett will succeed Thomas A. Lincoln, M.D., who will become associate medical director of Union Carbide Corporation.

As ORNL medical director, Dr. Garrett will be responsible for occupational health services covering some 5,500 members of the Laboratory staff and 500 other Oak Ridge employees of the Department of Energy and its contractors.

Dr. Garrett, a native of Knoxville, joined the Health Division in 1964. He completed his pre-med work at the University of Tennessee, Knoxville, and received his medical degree from UT's Medical School in Memphis.

He completed his internship at the UT Memorial Research Center and Hospital in Knoxville, and divided his three years of residency in internal medicine between that hospital and the Kennedy Veterans Hospital in Memphis.

Garrett served four years in the U.S. Navy's Hospital Corps prior to completing his medical training. While in medical school, he received the Roche Award for scholastic and leadership achievement in medical studies.

He is a member of Alpha Kappa Kappa Medical Fraternity and Alpha Omega - Alpha Honor Medical Society. Garrett is treasurer and a past president of the Knoxville Society of Internal Medicine and is a member of the board of directors and chairman



Dr. A. Seaton Garrett

of the research and grants committee of the East Tennessee Heart Association. He also is a member of the research and grants committee of the Tennessee Heart Association.

In addition, Garrett is a member of the Knoxville Academy of Medicine, Tennessee Medical Association, and the American Occupational Medical Association. He also is on the teaching staff of the UT Hospital.

He was appointed assistant medical director at ORNL in 1974.

Garrett and his wife, Lillian, live at 708 Coventry Road, Knoxville. They have three children, Seaton III, Kevin and Annette.



**DOE EMBLEM**—A new department was created October 1, the Department of Energy. The official seal, above, will be evident in the four plants shortly. The Energy Research and Development Administration was absorbed by DOE in the act creating the new agency.

## Nuclear Division News

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*Different drummer. . .*

## 'Lie back' and cruise, Buffett style

*Editor's note—Kent A. Williams, development engineer in the Operations Analysis and Planning Division, has worked at ORGDP for more than seven years.*

*He received his B.S. and M.S. degrees in chemical engineering from Purdue University, and is pursuing his Ph.D. at UT through the Oak Ridge Resident Graduate Program.*

*Williams is a member of the American Institute of Chemical Engineers.*

By Kent A. Williams

PH 77-3418



While most area folks find solace and enjoyment vacationing in the green hills of East Tennessee, a few find adventure and relaxation in the semi-tropical islands of the West Indies, which lie southeast of Florida. Many find a few days' stay on a large cruise ship or in a Miami Beach style hotel in Nassau sufficient, but the real beauty and excitement of the islands can only be seen from a cruising sailboat capable of penetrating the inlets of the hundreds of uninhabited "cays" (British spelling of keys) of the Bahama Bank.

**'the real beauty and excitement of the islands can only be seen from a cruising sailboat. . .'**

Among the pleasures that can be experienced are: watching magnificent sunsets followed by star-studded skies—rivaling those seen on only the clearest of Tennessee winter nights; sighting a distant waterspout; cavorting with prehistoric Iguana lizards on a deserted beach; or snorkeling in warm, clear waters atop coral reefs teeming with colorful marine life.

The conveyance which makes this sort of exploring physically and economically possible is the ocean cruising yacht—a sailboat usually 33-46 feet long and capable of sailing in water only six feet deep when necessary.

You are probably already wondering where the author came up with the approximately 60 thousand it costs to buy one of these. Well, quit wondering. . . I didn't buy the yacht. I rented it from someone else who buys and then recoups his investment by leasing (chartering) his boat to others. An agent, called a charterer, usually acts as an intermediary for a fee, and if the renters are capable of crewing the boat themselves (without hiring a captain), the procedure is known as "bareboat chartering."

For a crew of eight departing from Miami on a 40-foot sailing yacht, the cost comes to about \$250 per person for 10 days; which includes most food, lodging on the boat, and dockage fees while in port, but not the cost of getting to Florida and back.

The accommodations are by no means luxurious, but any person who has camping experience would consider them adequate. A cruiser contains: a galley (kitchen) with a gimbaled stove (to prevent spillage from rocking motion), two heads (bathrooms), several lockers (closets), and bunks. It is actually possible for one person to sail such a vessel, but he would be overly busy. Two essential persons on such a cruise are a captain, who is legally responsible for the vessel and makes decisions on destination, sail handling, night watches, etc., and a navigator, who plans the ship's course and determines its position. The entire crew must help with routine chores

both above and below deck and piloting (taking the helm and avoiding obstacles), which involves "standing watch" while sailing at night.

I got into this pastime in a rather indirect way. Having learned some basic sailing from my father, who has a "day-sailer" on a lake in Northern Illinois, I purchased a "Snark Sunflower," a car-top carried sailboat, which is so small that most yacht clubs won't accept a boat in its class. A friend with a similar boat told me about a five-yacht Bahamas cruise being taken by the Georgia Tech Sailing Club which needed a few crew members to fill cancellations.

So, needing some vacation, I decided to join them and it was off to Port Everglades in Fort Lauderdale to meet my boat and crew and make the Gulf Stream crossing to the Bahamas.

The crossing gave me my first experience with sea sickness, but fortunately the seas subsided some upon reaching the relatively shallow Bahama Banks, 50 miles east of Florida. Except for the occasional problems of keeping a fleet of five boats together under "motor" sailing conditions (no wind), the trip was generally a success.

**'The crossing gave me my first experience with sea sickness. . .'**

Every year a smaller Atlanta group from this cruise, plus a few new Oak Ridge sailing converts, get together and take a less organized trip. I have been on two of these more recent ones, a trip to the Exuma Islands in 1976 and to the Berry Islands in 1977; both of these island chains are part of the Bahamas. On these last two trips I have served as the navigator, having learned this art through a University of Tennessee correspondence course.

Sailing is not without dangers, and it pays to be aware of them before starting out. Foul weather accompanied by gusty winds can make sail handling very tricky. With

squalls constantly erupting, working above deck is not particularly pleasant. Rough weather can also sicken and tire the crew—thus lessening their efficiency. Running aground, especially at high tide, can have disastrous consequences, especially if waves are beating the hull against rocks or shoals. An unseen coral reef can also puncture the hull and sink a craft. Fortunately, most charts available to mariners mark such objects and indicate the proper depths in which to operate.

**'The whole atmosphere of sailboat cruising is very "laid back."'**

Other precautions to be observed have to do with various sea creatures such as sharks (not really as bad a hazard as Jaws would have one believe), stinging jellyfish, sting-rays, sea urchins, barracudas and moray eels. Of course, if you stay in the boat. . . no problem. But who can resist a swim in the clear, emerald ocean on a warm day? Since night is the time many sea creatures feed, swimming at night is foolhardy (indulgences are known as "fool's bait").

Despite occasional unwanted excitement, the whole atmosphere of sailboat cruising is very "laid back". Among the shipboard activities (or lack of, for those seeking total quietude) under sail are sunbathing, reading, sleeping or deep sea fishing. Off Grand Bahama Island I had the thrill of hooking a dolphin fish. Although it got away because I didn't have a gaff or net. . . I'll never forget the brilliant flashes of green from its shiny iridescent scales.

The unhurried atmosphere of the tropics is also evident in almost every island port. Many of the people and places could be right out of the pages of Ernest Hemingway novels or from the stanzas of Jimmy Buffett's quintessential song, "Marygarita-ville". For example, Bimini, which lies only 45 miles east of Miami, retains much of the big game fishing atmosphere which "Papa Hemingway" documented so well in *Islands in the Stream*. It's memories and experiences like this that urge me to set sail once again for the islands!

3993-77



**'Cavorting with prehistoric iguana lizard'**

## Four promotions announced at Y-12



Beck

Donsbach

Milligan

Sanders

Four appointments have been announced in the Y-12 Plant. David E. Beck has been named a metallurgical engineer and Douglas L. Donsbach has been promoted to a development associate in the Development Division; Jimmy R. Milligan and Harold G. Sanders have been named supervisors in the Fabrication Division.

Beck, a native of Johnstown, Pa., holds a B.S. degree from Penn State University, and is currently attending the University of Tennessee. He lives at 9004 F Grayland Drive, Knoxville.

Donsbach was born in Fort Campbell, Ky. and has a B.S. degree in physics from Austin Peay State University. He joined Union Carbide last year. Mrs. Donsbach is the former Frances M. Smith, and the couple lives at 3100 Lake Brook Boulevard, Knoxville.

Milligan, a native of Burlington, Tenn., has been with Union Carbide 15 years. Prior to that time he was with the Civil Service Commission.

Mrs. Milligan is the former Jamie Weaver, and the couple has three sons, Tim and Jim and Robert. They live at Route 5, Powell.

Sanders was born in Rockwood, and has been with Union Carbide eight years, in machining at Y-12 and as a barrier operator at ORGDP. He was formerly with International Harvester.

He and his wife, the former Jo Ann Wright, live at 418 North Wilder

Avenue, Rockwood. They have one son, Michael and a daughter, Candance.

## division death...

Robert C. Hopkins, Design Engineering Division at ORGDP, died at his Oak Ridge home October 5.

Mr. Hopkins joined Union Carbide at the Y-12 Plant in 1957, transferring to ORGDP in 1972. Well-known in athletics in the area, he played football, baseball and basketball in high school and refereed games for the Tennessee Secondary Schools Athletic Association. He attended the University of Tennessee and was a national director in the American Society of Certified Engineers Technicians.

Survivors include his wife, Madge Adams Hopkins, 106 Tilden Road, Oak Ridge; a son, Keith; and a daughter, Kathy; a brother, James B. Hopkins, in Y-12's Labor Relations; and his father, Charles B. Hopkins, who formerly worked in Y-12's Maintenance Department.

Funeral services were held at Martin Funeral Home, with burial in Oak Ridge Memorial Park.



## safety scoreboard

Time worked without a lost-time accident through October 6:

Paducah .....	76 Days	1,010,751 Man-Hours
ORGDP .....	161 Days	5,399,200 Man-Hours
Y-12 Plant .....	233 Days	7,136,000 Man-Hours
ONRL .....	163 Days	3,572,739 Man-Hours

## anniversaries

### Y-12 PLANT

#### 30 YEARS

Ray P. Walker, A Wing Shops; Charles A. Trotman, Engineering; David G. Schultz, Law Department; James R. Martin, Chemical Services; Jasper S. Porsise, Utilities Administration; and Evelyn L. Viles, Laboratory Operations.

#### 25 YEARS

Troy M. Morgan, Bobbie L. Mowell and Cleo Sideris.

#### 20 YEARS

Joseph R. Ryan Jr., Kenneth S. Whitehouse, Robert B. Burditt and George H. Rains.

### ORNL

#### 30 YEARS

James H. Day, Instrumentation and Controls; Berkley P. Davis, Finance and Materials; Jack R. McWhorter, Chemical Technology; Jack L. Posey, Plant and Equipment; Gerald N. Case, Chemical Technology; Betty W. McCown, Plant and Equipment; George G. Kelley, Fusion Energy; and Ocee C. Cole, Instrumentation and Controls.

#### 25 YEARS

Loness Guinn, Sherman A. Reed, Guinn A. Lockett, Richard W. Poole, Elder R. Mellon, Charles R. Miller and Kenneth L. Vander Sluis.

#### 20 YEARS

Joe M. Davis, Donald G. Jacobs, Tsuneo Tamura and Ronald T. Roseberry.

### ORGDP

#### 30 YEARS

Robbie M. Wyatt, Computer Sciences Division.

#### 25 YEARS

Hollace P. Rainwater, Dolas F. Fudge, Herman L. Walker, David W. Thomas, Johnny R. Johnson, Lawrence E. Fenstermaker, Charles C. Dinkins, Whetsel Branham, James R. Croley Jr., Samuel B. Hopwood and Otto E. Unger.

#### 20 YEARS

Robert J. Easterday, Mary S. Morgan, Clayton B. Tolliver and Frank B. McDonald Jr. Olin D. Elrod and Charles P. Chiasz Jr. (both on September 9).

### PADUCAH

#### 25 YEARS

Willie R. Walker, Jo A. Grisham, Hubert L. Conway Jr., Harold F. Connor, Clarence R. Robertson, Henry H. Roberts, Byron C. Edwards, Dorothy J. Utley, Charles A. McDaniel, Carson E. Pafford, Paul W. Gipson, Raymond H. Hunt, Vester L. Faircloth, Randall L. Scott, Hugh E. Johnson, Charles A. Collier, Charles L. Ashburn, Charles A. Hess, Alton Ross, Roy W. Perkins, Rupert E. Wyatt, Robert G. Kinney, William H. Fox Jr., Max W. Thurmond, Dalton D. Scott, Frank L. Miller, Norman L. Harper, Lois E. Davis, James R. Wood and Charles E. Dallas.

## ORNL Affirmative Action: Know your representative?



Seated, left to right: Julie Watts, Environmental Sciences; Margaret Castleberry, Laboratory Protection; Bill Cottrell, Engineering Technology; Pat Hunsicker, substituting for Jim Dumont, Biology; Cecil Higgins, Analytical Chemistry; and Joanne Gailar, Nuclear Division Equal Opportunity coordinator. Standing: George Flanagan, Neutron Physics; Nell Jones, Affirmative Action Office; Sidney Katz, Chemical Technology; Wilma Nichols, Industrial Safety and Applied Health Physics; Lois McGinnis, Rockville Laboratory; Phyllis Green, Solid State; Donna Slagle, Fusion Energy; Brenda Irons, substituting for Bob Smith, Finance and Materials; Pat Rice, Energy; and Lynda Lewis, ORNL Affirmative Action coordinator. Not pictured was Louise Dean, Health Division.



Seated, left to right: Bob Sherlin, Plant and Equipment; Ruth Tuft, Instrumentation and Controls; Nancy Betz, Computer Sciences; Janet Nunley, Central Management Offices; Gladys Carpenter, Operations; and Jeanne Auxier, Information. Standing: Bernie Lieberman, Engineering; Sloan Bomar, Metals and Ceramics; P. S. Lee, Quality Assurance and Inspection Engineering; Kathleen Ambrose, Health and Safety Research; Carl Ludemann, Physics; Bill Busing, Chemistry; Walt Mayotte, Plant and Equipment; and Jane Patterson, Employee Relations.

## recreationotes

### Carbide bowling. . .

#### Classic League

The Eightballs lead the Classic League, with an 11-1 record. The Has Beens are in close second place with a 10-2. Bill Ladd rolled high scratch series, 592; followed by Kendall Brooks who took a 591.

#### Carbide Family

Ted Burger rolled a high 277 scratch game recently in the Carbide Family League, posting a 624 series opening night. The Double Troubles lead the league with a 9-3 record.

#### ORNL C

The Alley Rads bypassed the Damagers recently to take over the ORNL C League. The Timber Wolves are in a close third, and rolled a 3007 series during the fifth week of bowling.

#### ORGDP A

The summer season came to a close in the A Shift Mixed League with a roll-off between the King Pins and Jive Turkeys. The Kings won the championship with a 2343 series.

#### ORGDP Women's

The Out-of-Towners lead the ORGDP Women's League over the Up-Towners. Elaine Griffies rolled the high individual series with a 548/620 count.

#### K-25 Tuesday

In the K-25 Men's Tuesday League the City Slickers lead with 95 points. The All Stars came in second with 74.5. B. G. Human bowled the high handicap series recently, posting a 686.

#### Shifters

There is a battle in the Carbide Shifters Mixed League between the Ups & Downs leading one-half point over the Two Plus Two. Sam Babb rolled the high scratch series of the week with a 563.

#### ORNL Ladies

The Avengers and Mousechasers are tied for the first position in the ORNL Ladies League. Georgie Gwinn has the high individual scratch game thus far with a 201.

#### Skeet League. . .

August winners for the Carbide Skeet League were Vern Raaen, ORNL, scoring 48.723; Roy Hicks, also of ORNL, took second with 48.080; while Bob Allstun, Y-12, picked up third place with a 47.947.

#### patents granted. . .

To Charles W. Hancher and Charles D. Scott, both of ORNL, for "Tapered Bed Bioreactor."



**BARBECUE-HOOTENANNY**—ORGDP staged its big fall event with a giant barbecue-hootenanny the last weekend in September at the Clark Center Recreation Park. A few scenes above attest to the happy crowd. And, as usual, the barbecue was the "best ever."

### Income tax seminar October 24, 25

The ORNL Credit Union will be conducting a two-session income tax seminar for members on October 24 and 25, 7:30-10 p.m., at the Oak Ridge Playhouse in Jackson Square.

The seminar will cover income tax preparation, tax law changes, and how one should adjust personal affairs so that they may become tax deductible. These are not repeat sessions; the two nights represent only one seminar.

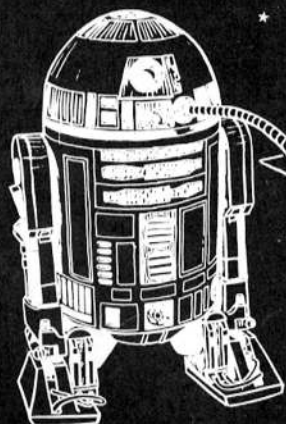
The seminar will be conducted by Dorothy L. Dare, a Certified Professional Accountant (CPA) and a UT evening school instructor in cost accounting. She works as a CPA for the Department of Energy.

A valuable feature of the seminar will be the question and answer sessions. On Monday, time will be allotted to submit questions in writing, with answers forthcoming on Tuesday evening.

Members interested in attending the tax seminar should mail their share drafts (or checks) to the Credit Union's Oak Ridge office. Participants will receive confirmation notice and badge prior to the seminar. Registered members can pick up information materials 30 minutes before the first session.

Space is available for approximately 150 more persons at the Playhouse. Registration will be conducted on a first-come, first-served basis. Fees are \$3 per person, \$5 per married couple.

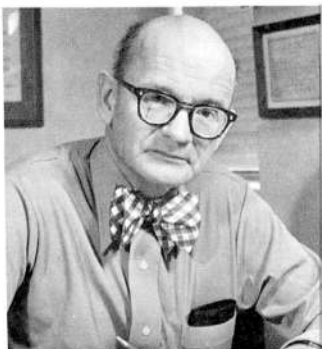
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The United Way  
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- how about U, 2?

**UNITED WAY POSTER**—A popular poster at ORNL these days is the campaign poster for the United Way, designed by Bobby Lyon and executed by Larry Wyrick.



*Medicine chest. . .*

## From chemotherapy to fetal movement

by T. A. Lincoln, M.D.

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, Y-12, or call the news editor in your plant, and give him or her your question on the telephone.)

**QUESTION:** "I have read that chemotherapy given to cancer patients not only makes them sick and causes their hair to fall out, but it sometimes causes another cancer to appear later. Please comment."

**ANSWER:** Ideally a cancer should be completely removed surgically. Sometimes this is not possible, or there is already evidence of spread to surrounding tissues. When surgical cure is not possible, chemicals are given in an attempt to destroy the malignant process. Unfortunately, these chemicals are extremely toxic. Their effectiveness is due to the slightly increased vulnerability of cancer cells to the damaging effect of these agents when compared to normal cells. Enough has to be given to destroy the cancer cells, yet not irreversibly damage normal cells. The margin of safety is often exceedingly small.

### Risk worth benefit

The risk is usually worth the benefit. Many patients have received periods of freedom from symptoms of their cancer for many months and many now appear to have been cured. Outstanding success has been achieved with many patients with acute leukemia, Hodgkins disease, choriocarcinoma of the testis and ovary, and Wilm's tumor—a kidney cancer which occurs in children. Lesser, but still impressive, successes have occurred with many other cancers.

There have been an increasing number of reports of second malignancies occurring in patients who have received cancer chemotherapy. Drs. Susan Sieber and Richard Adamson, Laboratory of Chemical Pharmacology of the National Cancer Institute of Bethesda, Md., published an exhaustive review of the published literature on the toxicity of antineoplastic agents in man in *Advances in Cancer Research* in 1975. An editorial in the July 28, 1977, issue of the *New England Journal of Medicine* titled, "Second Neoplasm—A Complication of Cancer Chemotherapy," also called physicians' attention to this hazard.

The real question: "How great is the risk?" The more aggressive the treatment, the greater is the risk. Early estimates placed the risk of acute leukemia eventually developing in patients who had been "cured" of Hodgkins disease at only one to two percent, whereas more recently a 10- to 20-fold increase has been

reported. New solid cancerous tumors have also been reported.

Women treated for cancer of the ovary, often using multiple chemotherapeutic agents, have a 21- to 36-fold increased risk of the development of acute leukemia. The risk goes higher the longer the period of survival. As Drs. Sieber and Adamson point out, the risk of a second malignancy is still small. One has to remember that there is evidence that patients with one malignancy run an increased risk of a second, unrelated malignancy—even if they have not received any chemotherapy or radiation treatment.

It would appear that the use of these toxic agents should probably be conservative. A sizeable number of women who have received adjuvant chemotherapy following apparently successful removal of a breast cancer are now being watched closely. The relapse rate following apparently successful surgery is still disappointingly high, but early reports indicate a decreased relapse rate after chemotherapy. The increased risk of leukemia, which has now appeared, must be balanced against the negative aspects of chemotherapy.

The use of cancer chemotherapeutic or immune system suppressing agents for nonmalignant conditions should be cautious. They have been used in patients with rheumatoid arthritis, psoriasis, lupus erythematosus (an often severe chronic connective tissue disease) and glomerulonephritis. In these diseases, the risk may clearly exceed the potential benefit.

### "Rehearses" in womb

**QUESTION:** "I am pregnant and am curious about all the kicking and moving that seems to be going on in my womb. Is it normal?"

**ANSWER:** An active fetus is probably a healthy one. Obstetricians advise their patients that delicate fetal movements can sometimes be felt by the fourth month and are usually noticeable by the fifth month. Often near term the mother can sometimes feel her fetus almost "stretching" its arms and legs.

Using ultrasonic scanning, doctors now can detect fetal movements as early as 10 to 11 weeks. Most likely they occur as early as seven weeks but are difficult to detect. Movement may include opening and closing of the mouth, bending of the neck and movements of the whole body. These

## Clarke named to fusion post

John F. Clarke, former head of the fusion energy research program at ORNL, has been named to a management position in the fusion program of the Department of Energy, Washington, D.C.



Clarke

Clarke, director of the Fusion Energy Division at ORNL for the past three years, became deputy director of the Magnetic Fusion Energy Division, effective September 28.

Clarke, a plasma physicist, joined Union Carbide in 1966 following completion of his doctoral work in nuclear engineering at Massachusetts Institute of Technology. He has worked in the fusion research program since joining ORNL, and was named director of the division in 1974.

A native of Long Island, N.Y., Clarke received his B.S. degree from Fordham University and an M.S. in plasma physics from Massachusetts Institute of Technology.

He is a Fellow of the American Association for the Advancement of Science and is a member of the American Physical Society. Clarke has also served on several review committees supporting the national fusion research program.

Clarke is married to Martha Ketelle, ORNL's Central Management Offices. They live at 24 Brookside Drive, Oak Ridge.

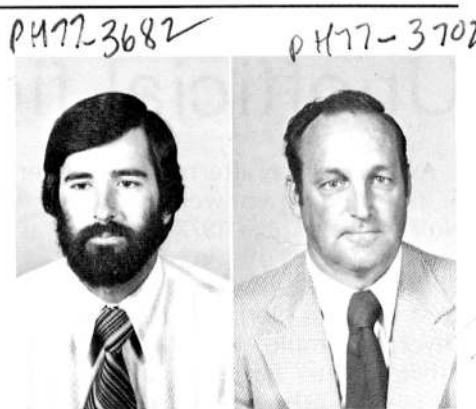
## Turkey Shoot

The Separation Systems Division at ORGDP is sponsoring a turkey shoot Saturdays, October 22, November 19 and December 3 at the Oak Ridge Sportsmen's Association Range. Firings begin at 9:30 and cost \$1 per relay (shells are furnished). . . all you bring is your 12, 16 or 20 gauge shotgun. There will be free coffee and all Union Carbide employees and their families are welcome. Separation Systems will use part of the proceeds to subsidize their picnic in the spring.

actions occur long before the mother can feel them. In order for her to feel them, they have to be sufficiently strong to stimulate the abdominal wall.

It has clearly been shown that the developing baby gasps, hiccups and moves its respiratory muscles. Survival immediately after birth depends on the respiratory muscles beginning to work immediately and vigorously after birth, so this "rehearsal" activity makes sense.

Your baby is just getting in practice for the starting gun which goes off at birth. It's then a long and grueling race through life, so be thankful that he or she (or both?) is getting ready for a healthy start.



Armour

Wilson

## Two promoted at ORGDP

Two promotions have been announced at ORGDP, as Robert R. Armour is named an accountant in Capacity Expansion; and Sammie D. Wilson has been promoted to a supervisor in Finance, Materials and Services.

Armour, a native of Kingston, holds a B.S. in business transportation from the University of Tennessee. He has been at ORGDP three years, and worked three years in Y-12 Dispatching.

Married to the former Brenda Hatfield, Armour lives at 104 Niagara Lane, Oak Ridge. The couple has two children, Courtney and Aaron.

Wilson, born in Union City, Tenn., served 22 years in the U.S. Air Force before joining Union Carbide in 1974. He is attending Roane State Community College.

He and his wife, Sarah, live at 140 Bluff Road, Westshore Estates, Kingston. They have two children, Cheryl Russell and Rondel Wilson.

wanted



### ORGDP

RIDE from Orchard Lane, East section of Oak Ridge, to Portal 8, D Shift. Janice Varnadore, plant phone 3-3649, home phone Oak Ridge 482-5477.

CAR POOL MEMBERS from Karnes to any Portal, straight day. E. W. Pritchard, plant phone 3-9573, home phone Karnes 947-3773.

### Y-12 Plant

VAN POOL RIDERS from Maryville—Fairview, Alcoa K-Mart, Alcoa-Farrport, to East, Biology, North or Central Portal, straight day. Joel Horton, plant phone 3-2226, home phone Maryville 983-9161.

RIDE or will join car pool from Middlebrook Pike (Raillery Apartments area) to North or Central Portal, straight day. Terry Tipton, plant phone 3-7285, home phone Knoxville 588-6933.

WILL JOIN CAR POOL OR VAN POOL from Claxton, Edgemoor Rd., area to West Portal, Post 16. Straight days, 8-4:30 shift. Contact: Betty Queen, plant phone 3-7338, home phone 945-2992.

### ORNL

CAR POOL MEMBERS from East Drive, California Avenue area, Oak Ridge, to East Portal, straight days. W. E. Clark, plant phone 3-6063, home phone 483-1208, or D.D. Pair, plant phone 3-6244, home phone 483-7884.

# Unofficial figures show United Way over the top

As of Thursday afternoon, October 6, not quite two weeks after the Nuclear Division's 1977 United Way campaign kickoff in Oak Ridge, unofficial daily reports showed that contributions pledged or donated by Division employees had reached more than \$614,000—about 103 percent of the 1977 goal. Broken down for the three Oak Ridge plants, the estimated figures were as follows: ORGDP, \$223,496, 112 percent of its goal; ORNL, \$222,687, 93 percent of goal; and Y-12, \$168,007, 102 percent of goal.

The campaign is by this time about at its midpoint, and will run through the end of October.

## Many over 100 percent

At ORGDP, 13 departments had achieved 100 percent of their dollar goal as of the campaign's opening day. These were Information Services, Employee Relations Administration, Personnel Relations, Wage and Salary, Transportation, Maintenance Division Administration, Salvage and Scrap Materials, Plant Managers Division Administration, Managers Special Projects, Operations Division's Special Projects, Shift Superintendents, Added Enrichment Review Administration, and Computer Sciences' K-25 Program Group.

"Thanks to you, it works" has never been a truer statement!" said

Gene Rooks, ORGDP's Publicity Chairman.

At ORNL, five divisions exceeded their goals the first week of the United Way campaign. These were Central Management, 108 percent; Quality Assurance and Inspection, 106 percent; Operations, 110 percent; Physics, 105 percent; and Solid State, 117 percent.

In addition, three ORNL departments with more than 50 members reached their goals in the campaign's first week: Roads and Grounds Maintenance, Decontamination Laundry and Custodial Services, and Instrumentation and Control's Section A, Maintenance Support Department.

At the end of the first week of the drive, Y-12 reports showed four divisions with 100 percent of their goals: Assembly, Development, Metal Preparation and Plant Managers.

## Employees can input

Questions have been received from a number of Division employees about how individuals can input to their local United Way organizations. Information concerning annual meetings, board meetings and the mechanism for becoming a board member can be obtained in Anderson, Knox, Loudon, Morgan and Roane Counties from the following persons:



OVER IN A WEEK—Representing the five ORNL divisions that exceeded their United Way campaign goals during the drive's first week are, seated, from left: Lois McGinnis, acting coordinator, and Miriam Guthrie, coordinator, for Central Management; Paulus S. Lee, coordinator for Quality Assurance; Physics Division Director Paul Stelson; Bennett Larson, coordinator for Solid State; and Gerry Dixon, coordinator for Operations. Standing are, from left: ORNL Director Herman Postma, Quality Assurance Department Director Jim McGuffey and Solid State Division Director Mike Wilkinson.

Anderson: Melly Koons, executive secretary, United Way of Anderson County, 483-8431 (or write her at 207 Donora Hall, Oak Ridge 37830).

Knox: Gwenn Human, communications director, United Way of Greater Knoxville, 523-9131 (1514 East Fifth Avenue, Knoxville 37917).

Loudon: Roy G. Cardwell, Oak Ridge coordinator for United Way of Loudon County, ORNL ext. 3-6637.

Morgan: Ray Buxton, chairman, United Way of Morgan County, ORNL ext. 3-1492.

Roane: A. J. Kessing, executive director, United Way of Roane County, Kingston 376-6442.

## New alloy made by Lab metallurgists

A new alloy developed and fabricated by ORNL metallurgists is part of the radioisotope generator system used to provide on-board electric power for the Voyager 1 and 2 spacecrafts.

The new material, called DOP-4 iridium, was developed as a cladding to safely contain radioactive plutonium-238, the heat source that powers the electric generator, in the event the spacecraft should fail to achieve orbit and impact with the earth's surface. Laboratory tests in the Metals and Ceramics Division have proved that the material can withstand impacts at terminal

velocities of over 200 miles per hour while operating at a temperature of 2450 degrees F.

ORNL fabricated approximately 20 kilograms of the new material which was sent to ERDA's Mound Laboratory in Miamisburg, Ohio, to be made into six heat sources. Each heat source contains 24 golf-ball-size spheres of the plutonium isotope enveloped in the iridium. Each sphere yields 100 watts of thermal power, for a total output of 2400 watts from each heat source.

The Voyager 1 and 2 missions are the longest ever planned. The 10-year voyage will start with a close-up view

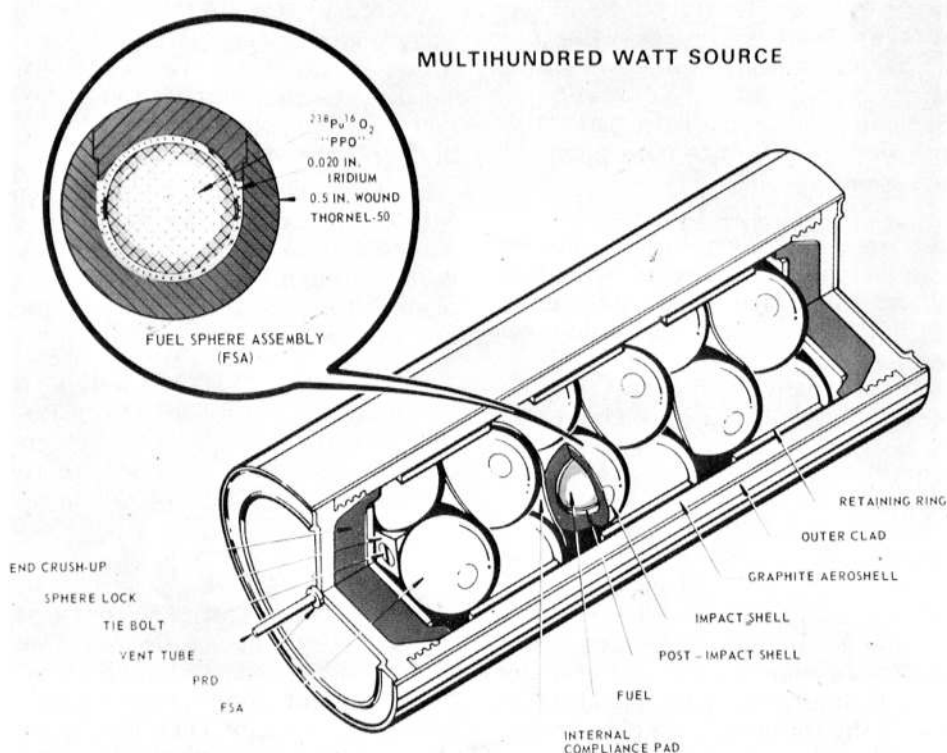
of Jupiter and Saturn, and then a possible look at two more distant planets, Uranus and Neptune.

C. T. Liu and Henry Inouye, Metals and Ceramics, were the principal developers of the new alloy. The material was fabricated by technicians in the materials processing laboratory under the supervision of Donald E. Harasyn and Richard L. Heestand. The overall effort was under the direction of Anthony Schaffhauser, who is in charge of programs carried out by the Metals and Ceramics Division for ERDA's Division of Nuclear Research and Applications.

## Rehab center

Employees viewing the Nuclear Division's United Way videotape have heard that the Michael Dunn Rehabilitation Center in Kingston offers a physical therapy program for children under six years old. Mrs. Eileen Harris, Center director, points out that theirs is not a physical therapy but an occupational therapy program—although in the case of young children this is largely a distinction between methods rather than goals, since the focus is on gross motor and fine motor control.

The Michael Dunn Center offers occupational therapy programs for clients from infants through adults, but does not employ a licensed physical therapist.



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